



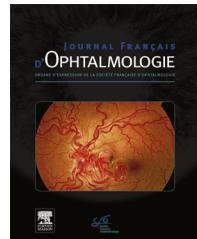
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LETTER TO THE EDITOR

Optic neuritis after COVID-19 infection: A case report



Névrite optique après infection au COVID-19: à propos d'un cas

Introduction

Coronavirus 2019 (COVID-19), caused by acute respiratory syndrome coronavirus 2 (SARS-CoV-2), spread all over the world starting in December 2019 and caused a pandemic. While it mainly affects the pulmonary system, it can also affect the cardiovascular, immunological, neurological, ophthalmological and gastrointestinal systems [1].

Ocular manifestations have been reported in conjunctival hyperemia, conjunctivitis, episcleritis, epiphora, fundus microhemorrhages, maculopathy, central retinal artery occlusion, and ophthalmic artery occlusion [2,3]. Neuro-ophthalmologic diseases may be in the form of optic neuritis, tonic pupil and orbital involvement. These diseases can be seen during the covid-19 active infection or recovery period. This may be caused by direct invasion of the virus or by viral antigens triggering the host immune response [4].

Optic neuritis is an autoimmune inflammatory condition characterized by decreased vision, pain with eye movements. Diagnosis is usually made by medical history and examination [5].

We aimed to present a case of unilateral optic neuritis after COVID-19 infection.

Case report

A 30-year-old female patient, who had no known disease before, was admitted to the hospital in early July 2022 with complaints of weakness, sore throat and cough. Polymerase chain reaction (PCR) test was performed with a nasopharyngeal swab in the patient suspected of COVID-19 and the test was positive. She received a single dose of BNT162b2 mRNA (Pfizer-BioNTech) vaccine 1 year ago. The patient, who was treated symptomatically, was quarantined at home. She did not need any oxygen or steroid treatment. Four days after the start of home quarantine, she complained of low vision in the left eye. After the quarantine was over, she was examined at the ophthalmology clinic and was referred to our hospital, saying that she had edema in the left eye.

The patient had a headache on the left side, eye pain that became evident with eye movements, and low vision in the left eye. Right eye, visual acuity was 20/20 and left eye visual acuity was 20/640. Intraocular pressure (IOP) was

19 mmHg in the right and left eyes. There was no inflammation in the anterior chamber or vitreous on slit lamp examination. There was a relative afferent pupillary defect (RAPD) in the left eye. Fundus examination was normal in the right eye and mild edema of the disc in the left eye. Optical coherence tomography (OCT) and fundus fluorescein angiography (FFA) images show edema and leakage in the left optic nerve (Figs. 1 and 2). In the 24-2 visual field of the left eye was almost completely closed (Fig. 3). The patient was hospitalized with diagnosis of optic neuritis. She was consulted with the neurology. There was no neurological defect. Routine blood tests, brain, spine and orbital magnetic resonance imaging (MRI) were requested. One gram intravenous methylprednisolone steroid treatment was started. A proton pump inhibitor was added to the therapy. Brain and spine MRI results were normal. In orbital MRI, linear enhancement areas located in the left retrobulbar were observed. Blood tests were normal. After 3 days of intravenous steroid treatment, oral steroid (1 mg/kg) was switched and the patient was discharged and followed up.

At the first follow-up, her left eye vision was 20/100, and left eye IOP was 19 mmHg. Fundus examination revealed decreased optic nerve edema. After 2 weeks, visual acuity in the left eye was 20/32 and IOP was 20 mmHg. anterior segment examination is normal. Fundus examination revealed a marked reduction in disc edema (Fig. 4). Improvements in the visual field were noted (Fig. 3). The patient was followed up by neurology and ophthalmology clinics.

Discussion

Several neuro-ophthalmological complications of COVID-19 have been observed. These are ocular pain, headache, diplopia, pupillary defect, ocular cranial nerve palsies, nystagmus, vision loss, and facial nerve palsy [6,7]. These complications may occur due to hypoxia, ischemic and hemorrhagic strokes, severe hypertension, and para-infectious and post-infectious inflammatory processes.

Post-COVID-19 optic neuritis has been reported in a small number of cases. In the case presented by Azab et al., a 32-year-old male patient presented with a sudden decrease in vision and headache in the left eye two weeks after COVID-19. There was mild edema in the optic nerve. His neurological examination was normal. After steroid treatment, symptoms regressed and vision levels increased. In their meta-analysis, they revealed that optic neuritis and retinal complications are more common in women after COVID-19 infection [8]. Sharma et al., described a 22-year-old female patient with inferior altitudinal visual field defect and optic nerve edema in the right eye 10 days after the symptoms of

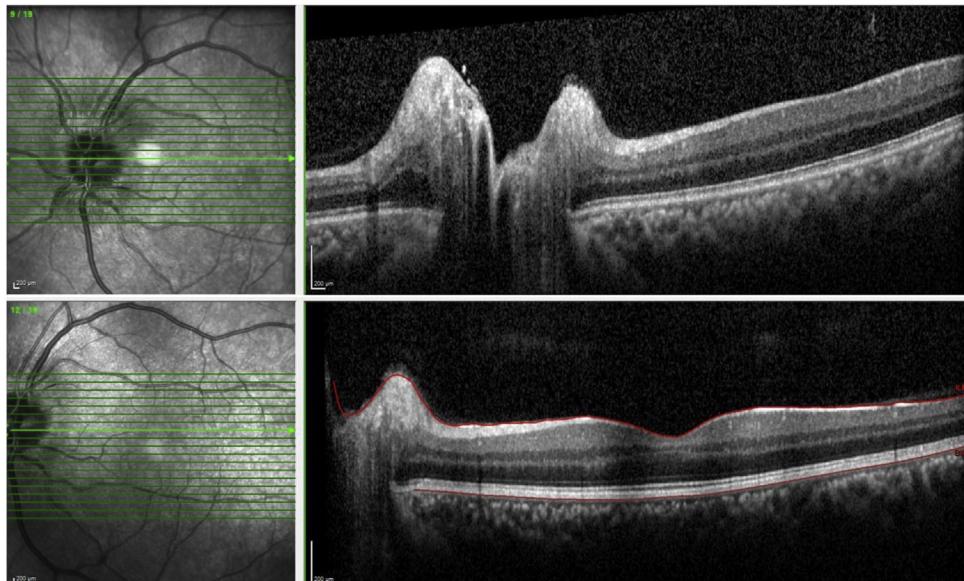


Figure 1. Left eye pre-treatment optical coherence tomography images; upper image is optic disc, bottom image is macula. The macula is normal, the optic disc is edematous.

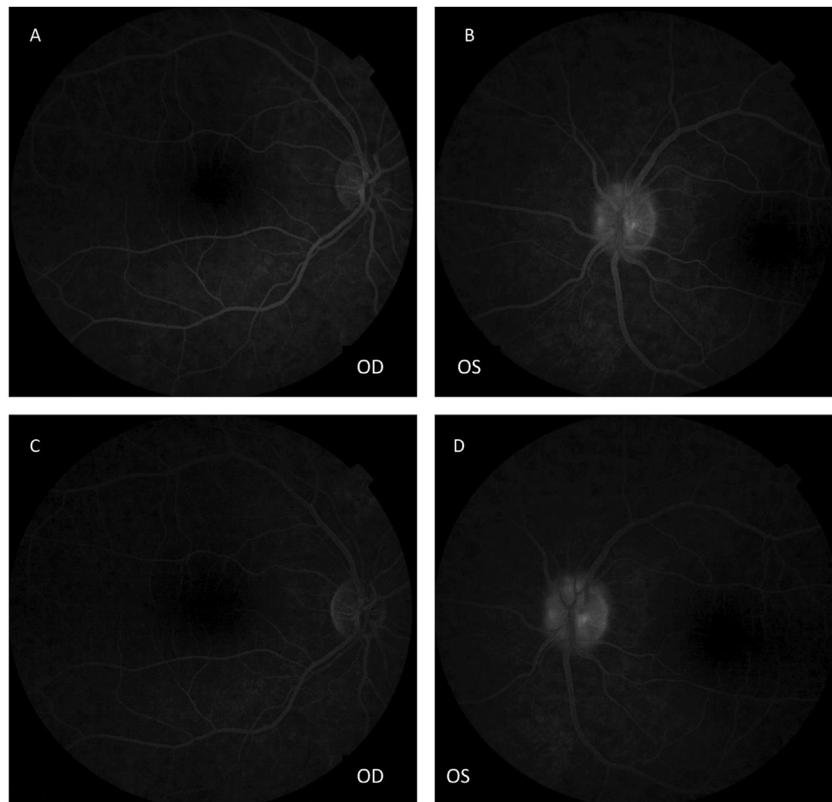


Figure 2. Early and late stage fundus fluorescein angiography images. Leakage in the left optic disc is noticeable.

COVID-19. Improved after steroid therapy [9]. Jossy et al., published a case series after COVID-19. First, a 16-year-old male patient presented with decreased vision in the left eye that started 2 weeks after the symptoms of COVID-19. The second is a 35-year-old male patient who had COVID-19 six months ago and had decreased vision in his left eye. The

third patient, a 38-year-old male patient, had symptoms of COVID-19 one and a half months ago and the PCR test was positive. All patients responded positively to steroid treatment [10]. There are studies reporting not only COVID-19 infection but also optic neuritis after COVID-19 vaccines [11].

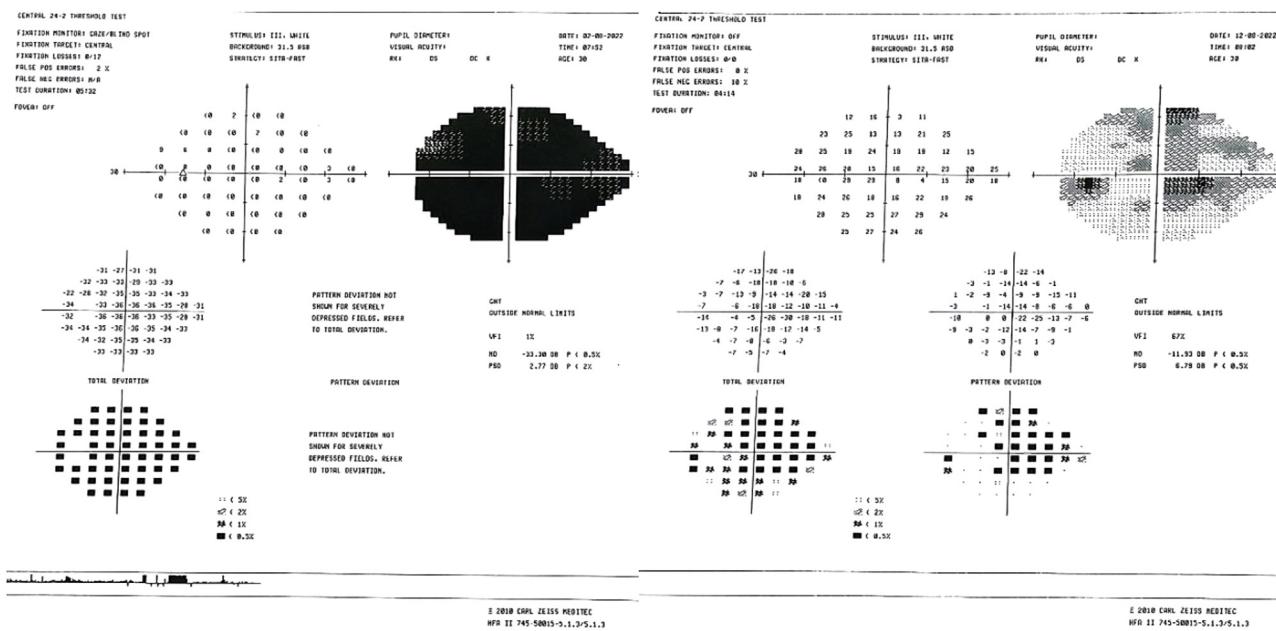


Figure 3. Pre-treatment (left side) and post-treatment (right side) visual field images.

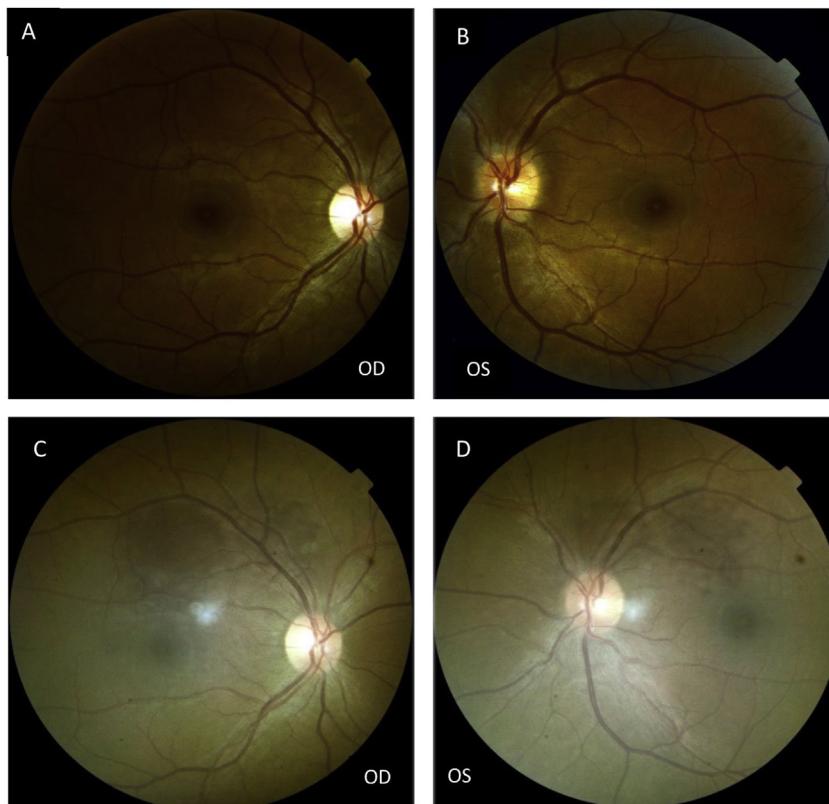


Figure 4. Pre-treatment (A) right eye, (B) left eye. Left eye optic disc slightly edematous. Below are post-treatment (C) right eye, (D) left eye fundus images. Edema in the optic disc of the left eye decreased.

In our case, optic neuritis developed after a mild COVID-19 infection like the above cases and responded well to steroid treatment.

As a result, COVID-19 can affect many organs as well as the eye. Clinicians should keep in mind that neuro-ophthalmologic diseases such as optic neuritis may develop

after COVID-19 infection, even if the disease is asymptomatic or with mild symptoms.

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Informed consent

Informed consent was obtained from patient included in this study.

Disclosure of interest

The authors declare that they have no competing interest.

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